

## WHAT IS CLAIMED IS:

1. A multi-peak detection method of a communication system using a plurality of energy values calculated through despreading a plurality I and Q component signals that are inputted into the communication system, the method comprising:

accumulating the plurality of energy values;

sequentially receiving the accumulated energy values in a prescribed order for comparison with previous energy values;

generating a mask signal from the comparison;

deciding whether to save the accumulated energy values based on a high-ranked mask signal; and

outputting a plurality of ranked energy values.

2. The method according to claim 1, wherein the accumulated energy values are inputted in consecutive order whenever a clock signal is generated.

3. The method according to claim 1, wherein the generating the mask signal and the deciding to save the accumulated energy values are operated at an interval of one clock, and wherein after initialization the previous plural energy values is a prescribed value.

4. The method according to claim 1, wherein the high-ranked mask signal is a signal that has been generated and saved during a previous clock signal.

5. The method according to claim 1, wherein the deciding whether to save the accumulated multiple energy values comprises:

receiving the high-ranked mask signal by a clock signal;

outputting an enable control signal based on the high-ranked mask signal;

deciding an enable status of a register based on the enable control signal;

selecting a present input energy value or a high-ranked energy value based on the enable control signal; and

saving the selected energy value based on the enable status of the register.

6. The method according to claim 5, wherein a high ranked enable control signal is outputted from an enable controller in a high-ranked peak detector.

7. The method according to claim 1, wherein if a next input energy value is within one chip of an input energy value, based on the input energy value, the next input energy value is masked out by the mask signal.

8. A multi-peak detection method of a mobile telecommunication system using a plurality of  $N$  energy values and  $M$  peak detectors, where  $M$  and  $N$  are integers satisfying  $M < N$ , and wherein the plurality of  $N$  energy values are calculated through despreads a plurality  $I$  and  $Q$  component signals that are received by a receiving end of the mobile telecommunication system, the method comprising:

- (a) receiving a single input energy value out of the plurality of energy values using a clock signal;
- (b) determining whether to save the input energy value by comparing the input energy value with a previous energy value in a first peak detector;
- (c) outputting a mask signal from a next peak detector based on the comparison result of the input energy value and the previous energy value;
- (d) determining an enable status of a register based on a high-ranked mask signal;
- (e) saving one of the input energy value and the previous energy value in the register based on a high-ranked enable control signal when the enable status of the register is enabled;
- (f) repeating the steps (c) through (e) from a second peak detector up to the  $M$ th peak detector;
- (g) receiving energy values per clock signal, while repeating the steps (b) through (f) up to the  $N$ th energy value; and

(h) outputting the energy values saved in a register of the M detectors when the peak detection is completed up to the Nth energy value.

9. The method according to claim 8, wherein the clock signal is generated in a half ( $\frac{1}{2}$ ) chip unit.

10. The method according to claim 8, wherein one selected energy value out of the plural energy values is saved in the first peak detector, and wherein an energy value inputted one clock before or after the selected energy value that is smaller than the selected energy value is masked out.

11. The method according to claim 8, wherein the mask signal calculated through the comparison of the first peak detector is saved in a delayer of the second peak detector.

12. A multi-peak detector of a mobile telecommunication system, comprising:  
means for cumulatively saving a plurality of energy values that are calculated by a matched filter and a squarer; and

means for outputting newly saved plural energy values out of the accumulated plural energy values, the new energy values being selected based on a high-ranked mask signal and a high-ranked enable control signal.

13. The device according to claim 12, wherein the means for outputting the newly saved plural energy values comprises a plurality of outputting means.

14. The device according to claim 12, wherein a number of energy values that are outputted from the means for outputting the newly saved plural energy values is smaller than a number of the accumulated plural energy values because of a maskability of the means for outputting.

15. The device according to claim 12, wherein a corresponding index is assigned to each of the accumulated plural energy values.

16. The device according to claim 12, wherein the means for outputting the newly saved plural energy values further comprises:

means for comparing a present input energy value with a previous energy value and for outputting a mask signal;

means for determining an enable control signal according to the mask signal in order to control an enable status of each register; and

means for selecting the present input energy value or a high-ranked energy value based on the enable control signal.

17. The device according to claim 16, further comprising means for temporarily saving the mask signal outputted from the comparing means, and for outputting the mask signal upon the occurrence of a clock signal.

18. The device according to claim 16, wherein the means for outputting comprises a plurality of delaying means for increasing search resolution.

19. An acquisition device in a mobile communication system, comprising:  
a filter coupled to receive a plurality of input signals and output despreading values;

an energy calculator circuit that receives the despreading values and cumulatively stores a corresponding plurality of energy values; and

a multi-peak detector that receives the plurality of energy values and outputs a ranked plurality of M energy values, wherein the multi-peak detector has M peak detectors, wherein at least one of the peak detectors comprises,

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a delayer that receives a clock signal and a high-ranked mask signal,  
a comparator that receives an input energy value and a first previous energy value and outputs a first control signal,  
a first multiplexer that receives the input value and a second previous energy value,  
a first register connected to receive an output of the first multiplexer, the clock signal and an enable control signal, and  
an enable controller that receives an output from the comparator, a delayed high-ranked mask signal from the delayer and a mask signal.

20. The device of claim 19, wherein delayers in second to M peak detectors are coupled to receive an input from first to (M-1) peak detectors, respectively, and wherein a logic gate receives an output signal from each of the M delayers and generates a second control signal.